



Cd and Cr+6 Uses on Stryker Family of Vehicles

Presented by:

Mr. Geoffrey Hoerauf

PMO Stryker Brigade Combat Team

QTechnology International Inc.

5/31/2006

PROJECT MANAGER
STRYKER BRIGADE COMBAT TEAM

Acquisition Excellence

Report Documentation Page			<i>Form Approved OMB No. 0704-0188</i>	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE 31 MAY 2006	2. REPORT TYPE	3. DATES COVERED 00-00-2006 to 00-00-2006		
4. TITLE AND SUBTITLE Cd and Cr+6 Uses on Stryker Family of Vehicles		5a. CONTRACT NUMBER		
		5b. GRANT NUMBER		
		5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)		5d. PROJECT NUMBER		
		5e. TASK NUMBER		
		5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) QTechnology International, Inc,PMO Stryker Brigade Combat Team,6009 Raina Drive,Centreville,VA,20120		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)		
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited				
13. SUPPLEMENTARY NOTES SERDP/ESTCP Metal Finishing Workshop, May 22 - 23, 2006, Washington, DC. Sponsored by SERDP/ESTCP.				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 11
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified		



Stryker Family of Vehicles



SBCT	Quantity
Infantry Carrier Vehicle	108
Mortar Carrier	36
Reconnaissance	48
Engineer Squad	9
Fire Support	13
Commander's	39
Medical	17
Antitank Guided Missile (ATGM)	9
NBCRV	3
Mobile Gun Systems (MGS)	27
Total	309



Environmental Management

- PMO Stryker BCT formally handles ESOH issues as part of its Environmental Hazard Management Program (EHMP) and Stryker System Safety Working Group.
- The Stryker EHMP assists PMO Stryker BCT in managing potential and known environmental hazards associated with the Stryker FoV
 - Identifying hazards
 - documenting and tracking hazards
 - reducing if not eliminating hazards
- The EHMP is based upon MIL-STD-882.



Environmental Management (Cont'd)

- In order to encompass expertise outside of PMO SBCT, PM SBCT established the Stryker Environmental Management Team (Stryker EMT) to assist with the EHMP.
- PM SBCT EMT consists of representatives from:
 - PMO SBCT Divisions
 - Prime contractor
 - ASA(ALT) Environmental Support Office
 - Army Environmental Center
 - Army Research Laboratory
 - Fielding/Test Installations
 - Other DA Organizations
- This collection of expertise enables PMO SBCT to concurrently incorporate perspectives and input regarding:
 - Pollution prevention opportunities
 - Resolve known and previously unknown environmental issues associated with the Stryker FoV manufacture, operation, maintenance, and demilitarization/disposal



Contractual Requirements

- The Stryker production and logistics contracts require the Government's approval for use of Cadmium, Hexavalent chromium, highly toxic or carcinogenic materials.
- PMO SBCT requires the prime contractor to obtain a waiver in order to use Hexavalent chromium, Cadmium, and Beryllium
- The waiver specifies why the hazardous material is required, where it will be used, and efforts underway to eliminate the material's use.



Other Cd and Cr+6 Elimination Drivers

- US and international regulations regarding Cr+6 and Cd have driven the need to identify and implement alternative materials.
 - U.S. OSHA Permissible Exposure Levels for Cd and Cr+6
 - U.S. EPA listing Cr+6 and Cd as RCRA wastes and HAPs
 - EU Directive 2002/95/EC, 27 January 2003: Restrictions on Hazardous Substances (RoHS)



Eliminated Uses of Cr+6 and Cd

- **Uses of Cr+6:**
 - DoD-P-15328 wash primer
 - Chromic acid rinse on ferrous parts that are zinc phosphated
 - Chromate conversion coating per MIL-DTL-81706B on non-threaded zinc plated components
 - Chromate conversion coating per MIL-DTL-81706B on non-electrical aluminum parts
- **Uses of Cd:**
 - Cadmium plated hardware and fasteners



Remaining Uses of Cr+6 and Cd

- Remaining uses of Cr+6 occurs on:
 - Fasteners (ASTM B633)
 - Surfaces requiring electrical conductivity (MIL-DTL-81706B Class 3)
 - Electrical connectors (MIL-DTL-81706B Class 3)
- Remaining uses of Cd occurs on:
 - Electrical connectors (QQ-P-416)



Barriers

- Stryker FoV prime contractor reluctant to use alternative materials unless:
 - Alternative materials specified by a military spec./standard or QPL
 - Contractually directed by PMO Stryker BCT
- Alternative materials used by commercial industries are available, but these materials are not validated for military use.



Remaining Needs

- 1) Replacement for Cr+6 uses on mechanical fasteners and aluminum components that require electrical conductivity**
- 2) Replacement for Cd plating on electrical connectors**
- 3) Metal pretreatment for high hard steel**
- 4) Qualification of existing commercial alternative materials for military applications**



Questions ?



Geoffrey Hoerauf
(586) 574-7886
DSN 786-7886
Hoeraufg@tacom.army.mil